

## FEATURES

- Wideband, 3 to 500 MHz
- DC isolated
- Good return loss
- Excellent amplitude unbalance, 0.5 dB typ. and
- Phase unbalance, 3 deg typ. in 1 dB bandwidth
- Plastic base with leads
- Aqueous washable



Generic photo used for illustration purposes only

CASE STYLE: AT224-1A

**+RoHS Compliant**The +Suffix identifies RoHS Compliance.  
See our website for methodologies and qualifications

## APPLICATIONS

- Balanced to unbalanced transformation
- Push-pull amplifiers
- Impedance matching
- CATV

## ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Unit
Impedance Ratio (Secondary/Primary)			1.33		Ohm
Frequency Range		3		500	MHz
Insertion Loss*	3.5-500		2		dB
	5-300		1		
Phase Unbalance	5-300		3		Deg.
	3.5-500		5		
Amplitude Unbalance	5-300		0.5		dB
	3.5-500		0.9		

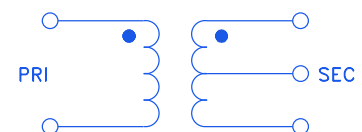
\*Insertion Loss is referenced to mid-band loss, 0.5 dB typ.

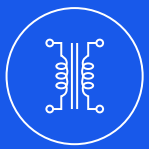
## ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Power	0.25W
DC Current	30mA

Permanent damage may occur if any of these limits are exceeded.

## CONFIG. A

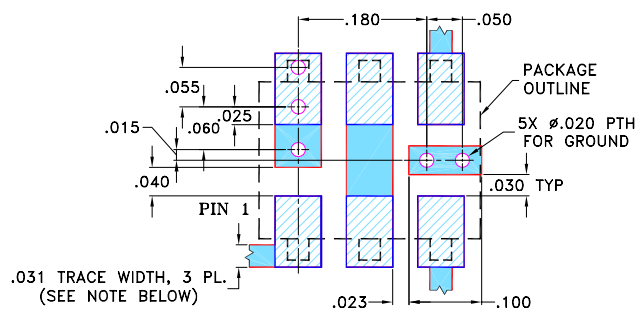




## PIN CONNECTIONS

PRIMARY DOT	6
PRIMARY	4
SECONDARY DOT	1
SECONDARY	3
SECONDARY CT	2

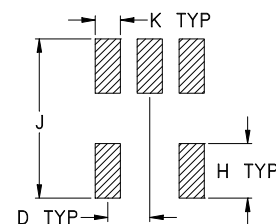
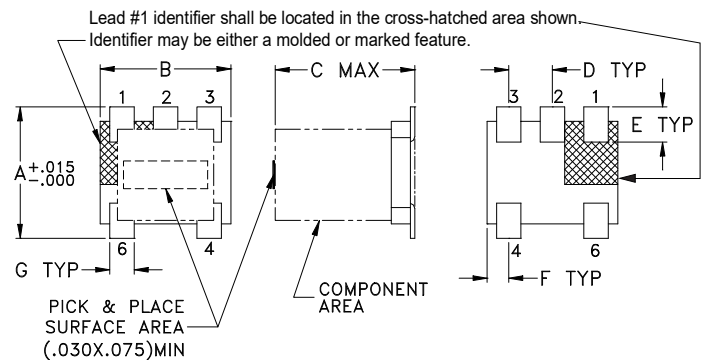
## PRODUCT MARKING: FQ

**DEMO BOARD MCL P/N: TB-09**  
**SUGGESTED PCB LAYOUT (PL-105)**


- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030"  $\pm$  .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

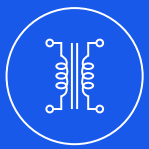
## OUTLINE DRAWING



Suggested Layout,  
Tolerance to be within  $\pm$ .002

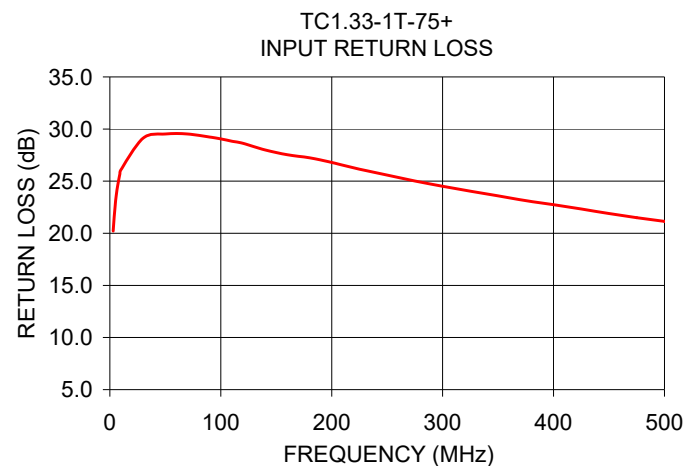
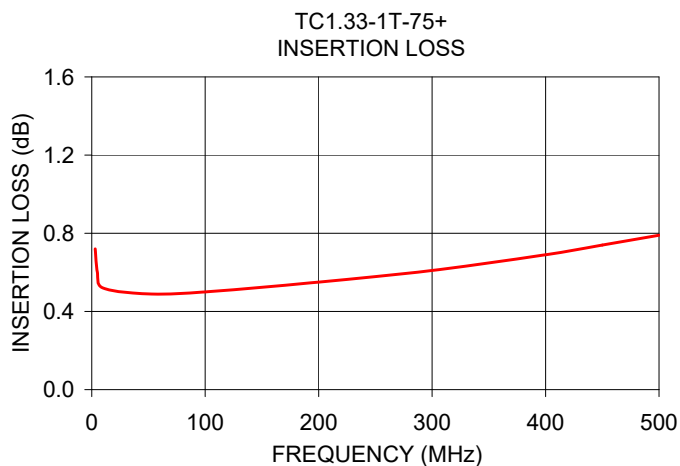
## OUTLINE DIMENSIONS (Inch mm)

A	B	C	D	E	F
.150	.150	.160	.050	.040	.025
3.81	3.81	4.06	1.27	1.02	0.64
G	H	J	K		wt
.028	.065	.190	.030		grams
0.71	1.65	4.83	0.76		0.15



## TYPICAL PERFORMANCE DATA

FREQUENCY (MHz)	INSERTION LOSS (dB)	INPUT R. LOSS (dB)	AMPLITUDE UNBALANCE (dB)	PHASE UNBALANCE (Deg.)
3.00	0.72	20.21	0.03	0.05
5.00	0.60	22.88	0.03	0.08
10.00	0.52	26.09	0.02	0.17
50.00	0.49	29.53	0.00	0.67
100.00	0.50	29.06	0.05	1.30
200.00	0.55	26.79	0.25	2.48
300.00	0.61	24.51	0.56	3.37
400.00	0.69	22.74	0.96	4.07
450.00	0.74	21.90	1.18	4.37
500.00	0.79	21.14	1.44	4.62



## NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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